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10/509,940	06/03/2005	Peter K. Law	37794-0042	4972

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EXAMINER	
POPA, ILEANA	

ART UNIT	PAPER NUMBER
1633	

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06/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,940	LAW, PETER K.	
	Examiner	Art Unit	
	Ileana Popa	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-39* is/are rejected.

7)☒ Claim(s) *27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of the invention of Group II, drawn to a composition of cell useful for the repair of the damaged heart and of the species of angiogenesis factor, scaffolding protein, and migration factor, in the reply filed on 03/13/2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-24 have been cancelled. Claims 28-39 are new. The new claims 28-39 are fully encompassed by the elected invention.

Claims 25-39 are pending and under examination.

Priority

2. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. [1] as follows:

The later-filed application must be an application for a patent for an invention that is also disclosed in the prior application (the parent or original non-provisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the

requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 60/368,563, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. The instant claims disclose a composition comprising myoblasts genetically engineered to express an angiogenic factor (claim 25), a scaffolding protein (claim 26), a migration factor (claim 27), chondroitin sulfate (claims 28, 29, 34, 35), angiogenesis factor in slow release form (claims 31 and 37), non-myoblast cells producing the angiogenic factor (claims 32 and 38). The Application No. 60/368,563 does not provide support for the above recitations. In addition to the above, the prior-filed application, PCT/US03/09505 fails to provide support for the limitation of non-myoblast cells producing the angiogenic factor (claims 32 and 38).

Therefore, the priority date for the limitation of non-myoblast cells producing the angiogenic factor (claims 32 and 38) is the filing date of the instant application, i.e., 06/03/2005. The priority date for the limitations of myoblasts genetically engineered to express an angiogenic factor (claim 25), a scaffolding protein (claim 26), a migration factor (claim 27), chondroitin sulfate (claims 28, 29, 34, 35), and angiogenesis factor in slow release form (claims 31 and 37), is the filing date of the PCT/US03/09505, i.e., 03/31/2003.

Claim Objections

3. Claim 27 is objected to because the comma between interleukin-8a and migration factor is missing. Appropriate correction is required.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees.

A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claim 25 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/523,969. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are obvious variants.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The instant claim is drawn to a composition of cells useful for the repair of damaged muscle, wherein the composition comprises myoblasts genetically modified to express factors such angiogenic factors.

The application claim recites a composition comprising isolated myoblasts genetically modified to express stimulators of angiogenesis (i.e., angiogenic factors). The specification discloses that the only use of such a composition is the repair of the diseased heart tissue (Abstract, p. 1, paragraphs 0002, 0009, and 0010). Thus, the application claim 1 anticipates the instant claim 25. Since the claim of the Application No. 10/523,969 embraces all limitation of the instant claim, the application claim and the instant claim are obvious variants of one another.

6. Claim 25 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/363,499. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are obvious variants.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The instant claim is drawn to a composition of cells useful for the repair of damaged muscle, wherein the composition comprises myoblasts genetically modified to express factors such angiogenic factors.

The application claim recites a composition comprising isolated myoblasts genetically modified to express stimulators of angiogenesis (i.e., angiogenic factors).

The specification discloses that such a composition is used for the repair of the diseased heart tissue (p. 1, paragraphs 0010-0012). Thus, the application claim 1 anticipates the instant claim 25. Since the claim of the Application No. 11/363,499 embraces all limitation of the instant claim, the application claim and the instant claim are obvious variants of one another.

Claim Rejections - 35 USC § 112, new matter

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 32 and 38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. 37 CFR 1.118 (a) states that "No amendment shall introduce new matter into the disclosure of an application after the filing date of the application". Specifically, the new claims reciting "non-myoblast cells that produce the angiogenesis factor" introduced new matter.

Applicants point to the bottom of page 15 for support. It is noted that the indicated passage does generally recite that myoblasts can be injected along with factor producing cells", however there is no support for the limitation the non-myoblasic cell specifically producing the angiogenic factor in the present specification. The

specification only discloses angiogenic factors exogenously added to the myoblasts before, during or after myoblast implantation, or angiogenic factors secreted by myoblast transfected with a nucleic acid encoding for an angiogenic factor (p. 5, paragraphs 0039 and 0047). A search of the remaining portions of the specification failed to provide literal support for "non-myoblasic cell that produce the angiogenic factor".

MPEP 2163.06 notes "If new matter is added to the claims, the examiner should reject the claims under 35 U.S.C. 112, first paragraph - written description requirement. *In re Rasmussen*, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981)." MPEP 2163.02 teaches that "Whenever the issue arises, the fundamental factual inquiry is whether a claim defines an invention that is clearly conveyed to those skilled in the art at the time the application was filed...If a claim is amended to include subject matter, limitations, or terminology not present in the application as filed, involving a departure from, addition to, or deletion from the disclosure of the application as filed, the examiner should conclude that the claimed subject matter is not described in that application. MPEP 2163.06 further notes "When an amendment is filed in reply to an objection or rejection based on 35 U.S.C. 112, first paragraph, a study of the entire application is often necessary to determine whether or not "new matter" is involved. Applicant should therefore specifically point out the support for any amendments made to the disclosure".

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 25 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (Circulation, 2001, 104: 207-212), as evidenced by Rousseau et al. (Trends Cardiovasc Med, 2000, 10: 321-327; Abstract).

Suzuki et al. teach a composition for the treatment of acute myocardial infarction, wherein the composition comprises myoblasts genetically altered such as to express VEGF, i.e., an angiogenic factor (claim 25) (p. 207, column 2, p. 208 columns 1 and 2). Since induction of endothelial cell migration is an inherent property of VEGF (see Rousseau et al., Abstract), Suzuki et al. also teach a composition comprising a migration factor (claim 27). Since Suzuki et al. teach all the claim limitations, the claimed invention is anticipated by the above-cited art.

11. Claims 25-27, 30, 32, 36, and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Edge (U.S. Patent No. 6,673,604), as evidenced by Rousseau et al. and Zhao et al. (Biochim Biophys Acta, 2001, 1538: 273-282)

Edge teaches a composition for repair of the damaged heart muscle comprising myoblasts, wherein the myoblasts are genetically engineered to express an angiogenic factor such as VEGF (i.e., an angiogenic and migration factor as recited in claims 25 and 27; see Rousseau et al., Abstract), wherein the myoblasts can be combined with fibroblasts (i.e., non-myoblast cells producing VEGF; see Zhao et al., Abstract, p. 274, column 1) (claims 32 and 38), wherein the myoblasts can be incorporated into collagen matrices (i.e., the composition further comprises a scaffolding protein, as recited in claim 26), wherein the myoblasts can be included in composition comprising angiogenic factors, and wherein the myoblasts are obtained from the patient and transplanted back into the same patient (claims 30 and 36) (Abstract, column 1 bridging column 2, column 2, lines 7-15 and 31-38, column 3 bridging column 4, column 6, lines 17-26, column 7, lines 24-28, column 16, lines 15-17 and 45-50, column 20, lines 25-31, column 22, lines 33-38 and 62-67). Since Edge teaches all the claim limitations, the claimed invention is anticipated by the above-cited art.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 25-27, 30-32, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edge taken with Rousseau et al. and Zhao et al., in view of Igari et al. (U.S. Patent No. 6,376,461).

The teachings of Edge taken with Rousseau et al. and Zhao et al. are applied as above for claims 25-27, 30, 32, 36, and 38. Edge et al. teach that their myoblasts can be included in composition comprising angiogenic factors (column 22, lines 62-67). However none of Edge, Rousseau et al. and Zhao et al. references teaches slow releasing the angiogenic factor (claims 31 and 37). Igari et al. teach a composition for the slow and sustained release of growth factors (claims 31 and 37) (Abstract, column 2, lines 1-57). It would have been obvious to one of skill in the art, at the time the invention was made, to modify the composition of Edge, Rousseau et al., and Zhao et al. by using the sustained and slow release composition of Igari et al., with a reasonable expectation of success. The motivation to do so is provided by Igari et al., who teach that such compositions are necessary when administering therapeutic agents with short biological half-life, such as growth factors (column 1, lines 23-34). One of skill in the art would have been expected to have a reasonable expectation of success in doing such because the art teaches that such composition can be successfully made and used. Thus, the claimed invention was *prima facie* obvious at the time the invention was made.

14. Claims 25-30 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Law (WO 96/18303), in view of Suzuki et al. and Rousseau et al.

Law teaches a composition for the repair of the damaged heart muscle comprising transduced myoblasts, wherein the myoblasts are obtained from the patient and administered into the same patient (claims 25, 30, and 36) and wherein the myoblasts are further treated by exposure to chondroitin sulfate (i.e., a scaffolding protein) at a concentration of 5μM to 5mM (claims 26, 28, 29, 34, and 35) (Abstract, p. 1, lines 10-17, p. 9, lines 20-27, p. 10, lines 10-14, p. 13, lines 4-14 and 27-35, p. 19 bridging p. 20, p. 20, lines 22-31, claim 3, p. 21, lines 8-12). Law does not teach a composition wherein the myoblasts transgenically express an angiogenic factor (claim 25) or a migration factor (claim 27). Suzuki et al. teach treatment of acute myocardial infarction using transplants of myoblasts expressing VEGF (p. 207, column 2, p. 208 columns 1 and 2). It would have been obvious for one skilled in the art, at the time the invention was made, to modify the composition of Law by genetically altering the myoblasts to express the VEGF of Suzuki et al., with a reasonable expectation of success. The motivation to do so is provided by Suzuki et al. who teach that transplantation of VEGF-expressing myoblasts, i.e., cell-mediated gene transfer may be useful for sustained, local VEGF delivery, which confers protection against ischemic injury via angiogenesis and vasodilatation mediated by an increase in nitric oxide (p. 207, column 1). One of skill in the art would have been expected to have a reasonable expectation of success in doing such because the art teaches that such compositions can be successfully made and used. Since induction of endothelial cell migration is an inherent property of VEGF (see Rousseau et al., Abstract), the composition of Law and

Suzuki et al. also comprises a migration factor (claim 27). Thus, the claimed invention is *prima facie* obvious at the time the invention was made.

15. Claims 25-27, 30, 32, 33, 36, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edge taken with Rousseau et al. and Zhao et al., in view of Goldschmidt et al. (J Clin Pharmacol, 1996, 36: 559-572, Abstract).

The teachings of Edge taken with Rousseau et al. and Zhao et al. are applied as above for claims 25-27, 30, 32, 36, and 38. Edge et al. teach that their myoblasts can be included in compositions further comprising additional agents. However, none of the Edge, Rousseau et al., and Zhao et al. references teaches a pharmaceutical compound that alters hyperpolarization (claims 33 and 39). Goldschmidt et al. teach nicorandil, a potassium channel activating drug for the treatment of ischemic heart disease (claims 33 and 39) (Abstract). It would have been obvious to one of skill in the art, at the time the invention was made, to include nicorandil in the composition of Edge, Rousseau et al., and Zhao et al., with a reasonable expectation of success. The motivation to do so is provided by Goldschmidt et al., who teach that nicorandil is a myocardial protective agent (Abstract). One of skill in the art would have been expected to have a reasonable expectation of success in doing such because the art teaches that such compositions can be successfully made and used. Thus, the claimed invention is *prima facie* obvious at the time the invention was made.

16. No claim is allowed. No claim is free of prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ileana Popa whose telephone number is 571-272-5546. The examiner can normally be reached on 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach can be reached on 571-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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